

PATENT Attomey Docket No. ASX-015CP

### IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

**APPLICANTS:** 

Chen et al.

**SERIAL NO.:** 

09/774,165

**GROUP NO.:** 

1765

FILING DATE:

January 26, 2001

**EXAMINER:** 

Not yet assigned.

TITLE:

INTEGRATED PLASMA CHAMBER AND INDUCTIVELY-

COUPLED TOROIDAL PLASMA SOURCE

# CERTIFICATE OF FIRST CLASS MAILING UNDER 37 C.F.R. 1.8

I hereby certify that this correspondence, and any document(s) referred to as enclosed herein, is/are being deposited with the United States Postal Service as first class mail, postage prepaid, in an envelope addressed to the Assistant Commissioner for Patents, Washington, DC 20231 on this 19 day of July, 2001.

**Assistant Commissioner for Patents** Washington, D.C. 20231

Sir:

Submitted herewith are: Transmittal Form (1 page); Supplemental Information Disclosure Statement (3 pages); Form PTO-1449 (11 pages); References Labeled A1 to A68, B1 to B3 and C1 to C112; and a Mailroom Postcard.

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	Î		Application	Serial Number	09/774,165	7 E m	
IAME	y		Filing Date		January 26		
		T	First Named	Inventor	Chen et al.		
	TRANSMITTA		Group Art U	Jnit	1765	7 2 7	
	FORM		Examiner N	ame	Not yet ass	signed.	
			Attorney Do	ocket No.	ASX-015C	TP U	
		F	ENCLOSURES (c	heck all that apply	y)		
☐ F	ee Transmittal Form		Copy of Notice	to File Missing		Appeal Communication to Board	
	Check Attached		Parts of Applica	ation (PTO-1553)		of Patent Appeals and Interferences	
	Copy of Fee Transmittal Form		Formal Drawing	g(s)		Appeal Communication to Group (Appeal Notice, Brief, Reply Brief)	
	Amendment/Response		Petition Routing and Accompany Convert to a Pro Application			Status Letter	
	☐ After Final ☐ Affidavits/declaration(s) ☐ Letter to Official Draftsperson		Power of Attorn (Revocation of			Return Receipt Postcard  Certificate of First Class Mailing under 37 C.F.R. 1.8	
	including Drawings [Total Sheets]		Terminal Disclaimer			Additional Enclosure(s) (please identify below)	
	Extension of Time Request		Executed Decla Attorney for Ut Patent Applicat		of	(predict ruemly) below)	
$\boxtimes$	Supplemental Information		Small Entity Sta	atement			
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$\boxtimes$	Copies of IDS Citations		Request for Ref	fund		<u> </u>	
	Certified Copy of Priority Document(s)		After Allowance to Group	e Communication		RECEIVED	
	Response to Missing Parts/					SEP 1 8 2001	
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CORR	RESPONDENCE ADDRESS			SIGNATURE I	вьоск	=	
	all correspondence to: Patent A Testa, H High Str 125 Hig Boston, Tel. No.	eet Towe	Thibeault, LLP or 10 48-7000	Date: July <u>/</u> 9, 20 Reg. No. 36,471 Tel. No.: (617) 2 Fax No.: (617) 2	01 48-7369	Respectfully submitted,  Joseph A. Captaro, Jr. Attorney for the Applicants Testa, Hurwitz & Thibeault, LLP High Street Tower 125 High Street	
						Boston, MA 02110	

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PATENT
Attorney Docket No. ASX-015CP

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# SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT

Sir:

In accordance with the provisions of 37 C.F.R. 1.97 and 1.98, Applicants hereby make of record the patents and publications listed on the accompanying Form PTO-1449, and other information contained herein, for consideration by the Examiner in connection with the examination of the above-identified patent application. Copies of the patents and publications are enclosed.

#### **REMARKS**

In accordance with the provisions of 37 C.F.R. 1.97, this statement is being filed (CHECK ONE):

(1)	within three (3) months of the filing date of a national application other than a continued prosecution application under 37 C.F.R. 1.53(d), or within three (3) months of the date of entry of the national stage as set forth in 37 C.F.R. 1.491 in an international application, or before the mailing of the first Office action on the merits, or before the mailing of a first Office action after the filing of a request for continued examination under 37 C.F.R. 1.114; or
(2)	after the period defined in (1) but before the mailing date of a final action or a notice of allowance under 37 C.F.R. 1.311, and
	the requisite Statement is below, OR
	the requisite fee under 37 C.F.R. 1.17(p), namely \$180.00, is included herein, or

Supplemental Information	Disclosure	Statement
Serial No. 09/774,165		
Page 2		

(3)	after the mailing date of a final action or notice of allowance but before the payment of the issue fee, AND
	the requisite Statement is below, AND
	the requisite petition fee under 37 C.F.R. 1.17(p), namely \$180.00 is included herein.

It is respectfully requested that each of the patents and publications listed on the attached Form PTO-1449, and other information contained herein, be made of record in this application.

#### **STATEMENT**

U.S. Patent No. 6,150,628, the parent of this patent application, is the subject of litigation in Delaware, Civil Action No. 00-1004-JJF. The Defendant in the litigation has brought the patents and publications listed on the attached Form PTO-1449 to Applicants' attention during the discovery process.

In addition, the Defendant filed a First Amended Answer, Affirmative Defenses and Counterclaim (along with other papers) on June 15, 2001. The Defendant made the following allegations in paragraph 15 of its Affirmative Defenses:

The '628 patent is unenforceable because of inequitable conduct before the U.S. Patent and Trademark Office. The following are presently known particular examples of such inequitable conduct:

- (a) In response to a rejection of claims of the application which matured into the '628 patent over an article by Kogan et al. and a patent to Zarowin et al., the applicants, through their attorney, stated that the systems described in the Kogan and Zarowin references "are driven by conventional RF power generators" that "require expensive and complex power delivery systems," in contrast to the power generators specified in the claims. The disclosures of Kogan and the Zarowin, however, are not restricted to systems driven only by "conventional" RF power generators. This misleading characterization of prior art was material to the patentability of the claimed invention and done with an intent to mislead the U.S. PTO into allowing claims of the '628 patent.
- (b) In response to a rejection of claims of the application which matured into the '628 patent in view of an article by Maier et al., the applicants, through their attorney, knowingly mischaracterized Maier as "nonanalogous prior art" that should not be considered because it was directed to the problem of "toroidal confinement and heating of a thermonuclear plasma," rather than the problem addressed in the application. The disclosures of Maier were highly pertinent, however, because the means of plasma generation described and claimed in the application were completely analogous to the

Supplemental Information Disclosure Statement Serial No. 09/774,165 Page 3

means used for heating thermonuclear plasmas. This misleading characterization of prior art was material to the patentability of the claimed invention and done with an intent to mislead the U.S. PTO into allowing claims of the '628 patent.

(c) After receiving a Notice of Allowability, the applicants, through their attorney, submitted a supplemental Information Disclosure Statement citing a reference entitled "Osram Endura 150W Product Information Brochure" dated November 1996 ("Osram Brochure"). Because the applicants disclosed the Osram Brochure after the Notice of Allowability was issued, the Patent Office did not consider the patentability of the claimed invention in view of that reference. Moreover, the applicants asserted without proof that the Osram Brochure did not constitute prior art because the applicants "made their invention prior to the date of the reference," even though the applicants did not exercise diligence toward reduction to practice of their claimed invention prior to November 1996. The untimely submission of the Osram Reference and the making of false statements regarding the applicants' prior invention were material to the patentability of the claimed invention and done with an intent to mislead the U.S. PTO into allowing claims of the '628 patent.

Applicants believe that the Defendant's allegations are without merit and expect to be fully vindicated through the judicial process. In accordance with their duty of candor and good faith, Applicants submit this information (and the enclosed documents) for consideration.

Respectfully submitted,

Date: July 19, 2001 Reg. No. 36,471

Tel. No.: (617) 248-7369 Fax No.: (617) 248-7100

VER 12/00 2137881-1 Joseph A. Capraro, Jr.
Attorney for the Applicants

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Boston, Massachusetts 02110



SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT

ATTORNEY DOCKET NO.: ASX-015CP

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#### **U.S. PATENT DOCUMENTS**

EXAM. INIT.		CUMENT MBER	DATE	NAME	CLASS	SUB CLASS	FILING DATE IF APPROPRIATE
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	A1	H627	04/04/89	Peng	10/03/85
	A2	Des. 384,173	09/23/97	Godyak et al.	07/19/96
•	A3	4,049,940	09/20/97	Moisan et al.	10/30/75
	A4	4,065,369	12/27/77	Ogawa et al.	07/15/76
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	A6	4,324,611	04/13/82	Vogel et al.	06/26/80
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	A10	4,631,105	12/23/86	Carroll et al.	04/22/85
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	A18	4,906,898	03/06/90	Moisan	08/08/9
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	A24	5,144,196	09/01/92	Gegenwart et al.	SEP 1 8 2001

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SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT

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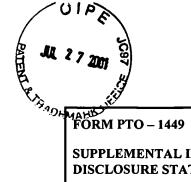
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EXAM.	DOCUMENT	DATE	NAME	CLASS	SUB	FILING DATE IF
INIT.	NUMBER	:			CLASS	APPROPRIATE

A	25 5,180,150	01/19/93	Prusak et al.	•		01/24/92
A	26 5,198,718	03/30/93	Davis et al.			
A	5,206,516	04/27/93	Keller et al.			04/29/91
A	28 5,280,154	01/18/94	Cuomo et al.			01/30/92
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A.	5,364,496	11/15/94	Bollinger et al.			08/20/93
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A.	6 5,419,803	05/30/95	Mumola		·	11/17/93
A.	5,468,955	11/21/95	Chen et al.			12/20/94
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**EXAMINER** DATE CONSIDERED SEP 1 8 2001



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A57	5,798,016	08/25/98	Oehrlein et al.	03/08/94
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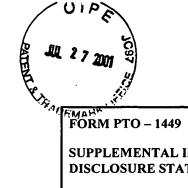
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EXAM. INIT.		DOCUMENT NUMBER	DATE	COUNTRY CODE	CLASS	SUB CLASS	FILING DATE	ABSTRAC T ONLY	ENGLISH LANG (Y/N)
	BI	61-139029	6/26/86	JP			12/10/84	N	Y-Abstract
	B2	5-144594	06/11/93	JP			11/19/91	N	Y-Abstract

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**U.S. PATENT DOCUMENTS** 

EXAM. INIT.	DOCUMENT NUMBER	DATE	NAME	CLASS	SUB CLASS	FILING DATE
	, compare				CLASS	APPROPRIATE

	В3	2-260399	10/23/90	JP			•	03/31/89	N	Y-Abstract
	•		OTHER	ART, J	OURNA	L AR	TICLES,	, ETC.		
EXAM. INIT.	( , , , , , , , , , , , , , , , , , , ,						ion)			
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	C2 Anderson, "Electrodeless Fluorescent Lamps Excited by Solenoidal Electric Field," IES Transaction, Illuminating Engineering (April 1969) pp. 236-242.  C3 Ashida et al., "Measurements of Pulsed-Power Modulated Argon Plasmas in an Inductively Coupled Plasma Source," J. Vac. Sci. Technol., (Mar/Apr 1996) pp. 391-397.							Transaction,		
								vely Coupled		
	C4 Asmussen, "Electron Cyclotron Resonance Microwave Discharges for Etching and Thin-Film Deposition," <u>Journal of Vacuum Science &amp; Technology A: Vacuum, Surfaces, and Films, Vol. 7, No. 3 (May 1989) pp. 883-893.</u> Abstract printed from Online Journal Publishing Service.									
	C5 Bacri et al., "Influence of Departures From Complete Thermodynamic Equilibrium on Transport Coefficient Values: Application to an Oxygen Plasma," <u>Plasma Sources Sci. Technol.</u> , (1994) pp. 114-1  C6 Baldwin et al., "MgF <sub>2</sub> Optical Films: Ion-Beam-Assisted Deposition of Magnesium Fluoride in a Conventional Electron Beam Evaporator and the Resulting Film Properties," <u>Society of Vacuum Coaters 40<sup>th</sup> Annual Technical Conference Proceedings</u> (1997) pp. 1-5.									
	C7 Bell, "Ring Discharge Excitation of Gas Ion Lasers," <u>Applied Physics Letters</u> , Vol. 7, No. 7 (October 196 p. 190.  C8 Benova et al., "Axial Distributions of Metastable Atoms and Charged Particles in an Ultrahigh Frequency Argon Plasma Column at Moderate Pressures," <u>J. Appl. Phys.</u> , Vol. 79, No. 8 (April 15, 1996) pp. 3848-3852.						lo. 7 (October 1965)			
C9 Benova et al., "Theoretical Study of the Influence of a Metal Enclosure on the Parameters of a Plasn Column Sustained by a Traveling Electromagnetic Surface Wave," Physica Scripta, Vol. 43 (1991) 73.										
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OTHER ART, JOURNAL ARTICLES, ETC.

EXAM. OTHER DOCUMENTS: (Including Author, Title, Date, Relevant Pages, Place of Publication)
INIT.

C11	Bishop et al., "Power Balance Measurements and Particle Loss Rate in Ohmically Heated Discharges in the C Stellarator," Plasma Physics and Controlled Nuclear Fusion Research: Proceedings of Second Conference of International Atomic Energy Agency, Vol. 2 (1966) pp. 673-685.
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C13	Böhle et al., "On the Influence of Excited Atoms on the Electron Kinetics of a Surface Wave Sustained Argon Plasma," Plasma Sources Sci. Technol. Vol. 3 (1994) pp. 80-87.
C14	Boisse-Laporte et al., "Microwave Discharges Produced by Surface Waves in Argon Gas," <u>Journal of Physics D: Applied Physics</u> , Vol. 20 (February 14, 1987) p. 197.
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C16	Bollinger et al., "Rapid, Nonmechanical, Damage-Free Figuring of Optical Surfaces Using Plasma-Assisted Chemical Etching (PACE): Part I Experimental Results," SPIE Vol. 966 Advances in Fabrication and Metrology for Optics and Large Optics (1988) pp. 82-90.
C17	Bollinger et al., "Rapid, Non-Contact Optical Figuring of Aspheric Surfaces With Plasma Assisted Chemical Etching (PACE)," SPIE Vol. 1333 Advanced Optical Manufacturing and Testing (1990) pp. 44-57.
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C19	Boswell et al., "Etching of Si by SF <sub>6</sub> in a Radio Frequency Double Cathode," <u>Journal of Vacuum Science &amp; Technology B: Microelectronics and Nanometer Structures</u> , Vol. 5, No. 4 (July 1987) pp. 883-888. Abstract printed from Online Journal Publishing Service.
C20	Bourdon et al., "Three-Body Recombination Rate of Atomic Nitrogen in Low-Pressure Plasma Flows,"  Physical Review E., Vol. 54, No. 2 (August 1996) pp. 1888-1898.
C21	Carruth, Jr., et al., "Method for Determination of Neutral Atomic Oxygen Flux," Rev. Sci. Instrum., Vol. 61, No. 4 (1990) pp. 1211-1216.
C22	Chen, "Industrial Applications of Low-Temperature Plasma Physics*," Phys. Plasmas, Vol. 2, No. 6 (June 1995) pp. 2164-2175.
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TC 1700

OTHER ART, JOURNAL ARTICLES, ETC.

EXAM. OTHER DOCUMENTS: (Including Author, Title, Date, Relevant Pages, Place of Publication)
INIT.

C25	Coburn et al., "Ion-and Electron-Assisted Gas-Surface Chemistry – An Important Effect in Plasma Etching," <u>Journal of Applied Physics</u> , Vol. 50, No. 5 (May 1979) pp. 3189-3196. Abstract printed from Online Journal Publishing Service.
C26	Cohen et al., "Induced Magnetic Field Effects in Inductively Coupled Plasmas," <a href="Physics of Plasma">Physics of Plasma</a> , Vol. 3, No. 5 (May 1996) pp. 1839-1847. Abstract printed from Online Journal Publishing Service.
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C36	Ferreira et al., "Quasi-Neutral Theory of Positive Columns in Electronegative Gases," J. Phys. D: Appl. Phys., Vol. 21 (1988) pp. 1403-1413.
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C38	Fiala et al., "Two-Dimensional, Hybrid Model of Low-Pressure Glow Discharges," Physical Review E., Vol. 49, No. 6 (June 1994) pp. 5607-5622.

EXAMINER DATE CONSIDERED TECHNOLOGY CENTER No. 30

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**FORM PTO - 1449** 

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APPLICANTS: Chen et al.

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